

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of
John R. MURPHY et al.

International Application No.
PCT/US00/29231

International Filing Date:
23 October 2000

For: VACCINE COMPOSITIONS

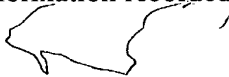
X

BOX SEQUENCE
Commissioner for Patents
Washington, D.C. 20231

STATEMENT ACCOMPANYING SEQUENCE LISTING

Sir:

Applicants enclose herewith the sequence listing in computer readable form (*i.e.*, a diskette) as well as a paper copy for the above referenced U.S. National application. The sequence listing does not include matter which goes beyond the content of the Application as filed and the information recorded on the diskette is identical to the written sequence listing.



Respectfully submitted,

LERNER, DAVID, LITTENBERG,
KRUMHOLZ & MENTLIK, LLP

Gina Maldonado

Date: 6/15/01

600 South Avenue West
Westfield, NJ 07090
Telephone: (908)654-5000
Facsimile: (908)654-7866

09868753-061201

SEQUENCE LISTING

<110> Murphy, John R.
O'Lear, Edward
Harrison, Robert J.

<120> Vaccine Compositions

<130> AMSC 3.3-001

<140> To be assigned
<141>

<150> PCT/US00/29231
<151> 2000-10-23

<160> 36

<170> PatentIn Ver. 2.1

<210> 1
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 1
accagatctg ccgaaaaact tcga 24

<210> 2
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 2
accagatctc cgccttttagt attta 25

<210> 3
<211> 27
<212> DNA
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Native tox
operator

<400> 3
ataattagga tagctttacc taattat 27

09060753 061201

<210> 4
<211> 19
<212> DNA
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: DNA target site

<400> 4
gtaggttagg ctaacctat 19

<210> 5
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Consensus-binding sequence

<220>
<221> modified_base
<222> (1)..(25)
<223> "n" represents variable bases

<400> 5
ananttaggn tagnctannc tnnnn 25

<210> 6
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Variant DNA

<400> 6
twagggttags ctaacctwa 19

<210> 7
<211> 230
<212> PRT
<213> Mycobacterium tuberculosis

<400> 7
Met Asn Glu Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
1 5 10 15

Asp Leu Glu Glu Glu Gly Val Thr Pro Leu Arg Ala Arg Ile Ala Glu
20 25 30

Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ser Arg Met
35 40 45

Glu Arg Asp Gly Leu Leu Arg Val Ala Gly Asp Arg His Leu Glu Leu
50 55 60

Thr Glu Lys Gly Arg Ala Leu Ala Ile Ala Val Met Arg Lys His Arg
65 70 75 80

Leu Ala Glu Arg Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Glu
85 90 95

Val His Ala Glu Ala Cys Arg Trp Glu His Val Asn Ser Glu Asp Val
100 105 110

Glu Arg Arg Leu Val Lys Val Leu Asn Asn Pro Thr Thr Ser Pro Phe
115 120 125

Gly Asn Pro Ile Pro Gly Leu Val Glu Leu Gly Val Gly Pro Glu Pro
130 135 140

Gly Ala Asp Asp Ala Asn Leu Val Arg Leu Thr Glu Leu Pro Ala Gly
145 150 155 160

Ser Pro Val Ala Val Val Val Arg Gln Leu Thr Glu His Val Gln Gly
165 170 175

Asp Ile Asp Leu Ile Thr Arg Leu Lys Asp Ala Gly Val Val Pro Asn
180 185 190

Ala Arg Val Thr Val Glu Thr Thr Pro Gly Gly Gly Val Thr Ile Val
195 200 205

Ile Pro Gly His Glu Asn Val Thr Leu Pro His Glu Met Ala His Ala
210 215 220

Val Lys Val Glu Lys Val
225 230

<210> 8
<211> 223
<212> PRT
<213> *Corynebacterium diptheriae*

<400> 8
Met Lys Asp Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
1 5 10 15

Glu Leu Glu Glu Glu Gly Val Thr Pro Leu Arg Ala Arg Ile Ala Glu
20 25 30

Arg Leu Glu Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ala Arg Met
35 40 45

Glu Arg Asp Gly Leu Val Val Val Ala Ser Asp Ser Leu Gln Met Thr
50 55 60

Pro Thr Gly Arg Thr Leu Ala Thr Ala Val Met Arg Lys His Arg Leu
65 70 75 80

Ala Glu Arg Leu Leu Thr Asp Ile Ile Gly Leu Asp Ile Asn Lys Val
85 90 95

His Asp Glu Ala Cys Arg Trp Glu His Val Met Ser Asp Glu Val Glu
100 105 110

Arg Arg Leu Val Lys Val Lys Asp Val Ser Arg Ser Pro Phe Gly Asn
115 120 125

Pro Ile Pro Gly Leu Asp Glu Leu Gly Val Gly Asn Ser Asp Ala Ala
130 135 140

Ala Pro Gly Thr Arg Val Ile Asp Ala Ala Thr Ser Met Pro Arg Lys
145 150 155 160

Val Arg Ile Val Gln Ile Asn Glu Ile Phe Gln Val Glu Thr Asp Gln
165 170 175

Phe Gln Leu Leu Asp Ala Asp Ile Arg Val Gly Ser Glu Val Glu Ile
180 185 190

Val Asp Arg Asp Gly His Ile Thr Leu Ser His Asn Gly Lys Asp Val
195 200 205

Glu Leu Leu Asp Asp Leu Ala His Thr Ile Arg Ile Glu Glu Leu
210 215 220

<210> 9

<211> 174

<212> PRT

<213> Staphylococcus epidermitis

<400> 9

Met Thr Val Ser Cys Pro Pro Pro Ser Thr Ser Glu Arg Glu Glu Gln
1 5 10 15

Ala Arg Ala Leu Cys Leu Arg Leu Leu Thr Ala Arg Ser Arg Thr Arg
20 25 30

Ala Glu Leu Ala Gly Gln Leu Ala Lys Arg Gly Tyr Pro Glu Asp Ile
35 40 45

Gly Asn Arg Val Leu Asp Arg Leu Ala Ala Val Gly Leu Val Asp Asp
50 55 60

Thr Asp Phe Ala Glu Gln Trp Val Gln Ser Arg Arg Ala Asn Ala Ala
65 70 75 80

Lys Ser Lys Arg Ala Leu Ala Ala Glu Leu His Ala Lys Gly Val Asp
85 90 95

Asp Asp Val Ile Thr Thr Val Leu Gly Gly Ile Asp Ala Gly Ala Glu
100 105 110

Arg Gly Arg Ala Glu Lys Leu Val Arg Ala Arg Leu Arg Arg Glu Val

115	120	125
Leu Ile Asp Asp Gly Thr Asp Glu Ala Arg Val Ser Arg Arg Leu Val		
130	135	140
Ala Met Leu Ala Arg Arg Gly Tyr Gly Gln Thr Leu Ala Cys Glu Val		
145	150	155
		160
Val Ile Ala Glu Leu Ala Ala Glu Arg Glu Arg Arg Arg Val		
	165	170
<210> 10		
<211> 225		
<212> PRT		
<213> Mycobacterium leprae		
<400> 10		
Met Asn Asp Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr		
1	5	10
		15
Asp Leu Glu Glu Glu Gly Ile Val Thr Pro Leu Arg Ala Arg Ile Ala		
	20	25
		30
Glu Arg Pro Thr Val Ser Gln Thr Val Ser Arg Met Glu Arg Asp Gly		
	35	40
		45
Leu Leu Arg Val Ala Gly Asn Arg His Leu Glu Leu Thr Thr Lys Gly		
50	55	60
Arg Ala Met Ala Ile Ala Val Met Arg Lys His Arg Leu Ala Glu Arg		
65	70	75
		80
Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Glu Val His Ala Glu		
	85	90
		95
Ala Cys Arg Trp Glu His Val Met Ser Glu Asp Val Glu Arg Arg Leu		
	100	105
		110
Ile Lys Val Leu Asn Asn Pro Thr Thr Ser Pro Phe Gly Asn Pro Ile		
	115	120
		125
Pro Gly Leu Leu Asp Leu Gly Ala Gly Pro Asp Ala Ser Ala Ala Asn		
130	135	140
Ala Lys Leu Val Arg Leu Thr Glu Leu Pro Ser Gly Ser Pro Val Ala		
145	150	155
		160
Val Val Val Arg Gln Leu Thr Glu His Val Asp Asp Ile Asp Leu Ile		
	165	170
		175
Thr Arg Leu Lys Asp Thr Gly Val Val Pro Asn Ala Arg Val Thr Val		
	180	185
		190
Glu Thr Ser Pro Ala Gly Asn Val Ile Ile Ile Ile Pro Gly His Glu		
195	200	205

Asn Val Thr Leu Pro His Glu Met Ala His Ala Val Lys Val Glu Lys
210 215 220

Val
225

<210> 11
<211> 230
<212> PRT
<213> Mycobacterium tuberculosis

<400> 11
Met Asn Glu Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
1 5 10 15

Asp Leu Glu Glu Glu Gly Val Thr Pro Leu Arg Ala Arg Ile Ala Glu
20 25 30

Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ser Arg Met
35 40 45

Glu Arg Asp Gly Leu Leu Arg Val Ala Gly Asp Arg His Leu Glu Leu
50 55 60

Thr Glu Lys Gly Arg Ala Leu Ala Ile Ala Val Met Arg Lys His Arg
65 70 75 80

Leu Ala Glu Arg Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Glu
85 90 95

Val His Ala Glu Ala Cys Arg Trp Glu His Val Met Ser Glu Asp Val
100 105 110

Glu Arg Arg Leu Val Lys Val Leu Asn Asn Pro Thr Thr Ser Pro Phe
115 120 125

Gly Asn Pro Ile Pro Gly Leu Val Glu Leu Gly Val Gly Pro Glu Pro
130 135 140

Gly Ala Asp Asp Ala Asn Leu Val Arg Leu Thr Glu Leu Pro Ala Gly
145 150 155 160

Ser Pro Val Ala Val Val Val Arg Gln Leu Thr Glu His Val Gln Gly
165 170 175

Asp Ile Asp Leu Ile Thr Arg Leu Lys Asp Ala Gly Val Val Pro Asn
180 185 190

Ala Arg Val Thr Val Glu Thr Thr Pro Gly Gly Gly Val Thr Ile Val
195 200 205

Ile Pro Gly His Glu Asn Val Thr Leu Pro His Glu Met Ala His Ala
210 215 220

Val Lys Val Glu Lys Val
225 230

09858753 061201

<210> 12
 <211> 233
 <212> PRT
 <213> Mycobacterium smegmatis

<400> 12
 Met Asn Asp Leu Val Asp Thr Thr Glu Asn Tyr Leu Arg Thr Ile Tyr
 1 5 10 15
 Asp Leu Glu Glu Glu Gly Val Val Pro Leu Arg Ala Arg Ile Ala Glu
 20 25 30
 Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ser Arg Met
 35 40 45
 Glu Arg Asp Gly Leu Leu His Val Ala Gly Asp Arg His Leu Glu Leu
 50 55 60
 Thr Asp Lys Gly Arg Ala Leu Ala Val Ala Val Met Arg Lys His Arg
 65 70 75 80
 Leu Ala Glu Arg Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Asp
 85 90 95
 Val His Ala Glu Ala Cys Arg Trp Glu His Val Met Ser Glu Glu Val
 100 105 110
 Glu Arg Arg Leu Val Gln Val Leu Glu Asn Pro Thr Thr Ser Pro Phe
 115 120 125
 Gly Asn Pro Ile Pro Gly Leu Thr Glu Leu Ala Val Thr Pro Gly Val
 130 135 140
 Asn Thr Glu Asp Val Ser Leu Val Arg Leu Thr Glu Leu Pro Val Gly
 145 150 155 160
 Met Pro Val Ala Val Val Val Arg Gln Leu Thr Glu His Val Gln Gly
 165 170 175
 Asp Thr Asp Leu Ile Gly Arg Leu Lys Glu Ala Gly Val Val Pro Asn
 180 185 190
 Ala Arg Val Thr Val Glu Ala Asn Asn Asn Gly Gly Val Met Ile Val
 195 200 205
 Ile Pro Gly His Glu Gln Val Glu Leu Pro His His Met Ala His Ala
 210 215 220
 Val Lys Val Glu Lys Val Glu Lys Val
 225 230

<210> 13
 <211> 174
 <212> PRT

<213> Mycobacterium tuberculosis

<400> 13

```

Met Thr Val Ser Cys Pro Pro Pro Ser Thr Ser Glu Arg Glu Glu Gln
 1             5             10             15

Ala Arg Ala Leu Cys Leu Arg Leu Leu Thr Ala Arg Ser Arg Thr Arg
      20             25             30

Ala Glu Leu Ala Gly Gln Leu Ala Lys Arg Gly Tyr Pro Glu Asp Ile
      35             40             45

Gly Asn Arg Val Leu Asp Arg Leu Ala Ala Val Gly Leu Val Asp Asp
      50             55             60

Thr Asp Phe Ala Glu Gln Trp Val Gln Ser Arg Arg Ala Asn Ala Ala
      65             70             75             80

Lys Ser Lys Arg Ala Leu Ala Ala Glu Leu His Ala Lys Gly Val Asp
      85             90             95

Asp Asp Val Ile Thr Thr Val Leu Gly Gly Ile Asp Ala Gly Ala Glu
      100            105            110

Arg Gly Arg Ala Glu Lys Leu Val Arg Ala Arg Leu Arg Arg Glu Val
      115            120            125

Leu Ile Asp Asp Gly Thr Asp Glu Ala Arg Val Ser Arg Arg Leu Val
      130            135            140

Ala Met Leu Ala Arg Arg Gly Tyr Gly Gln Thr Leu Ala Cys Glu Val
      145            150            155            160

Val Ile Ala Glu Leu Ala Ala Glu Arg Glu Arg Arg Arg Val
      165            170

```

<210> 14

<211> 228

<212> PRT

<213> Brevibacterium lactofermentum

<400> 14

```

Met Lys Asp Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
 1             5             10             15

Glu Leu Glu Glu Glu Gly Ile Val Pro Leu Arg Ala Arg Ile Ala Glu
      20             25             30

Arg Leu Glu Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ala Arg Met
      35             40             45

Glu Arg Asp Gly Leu Val His Val Ser Pro Asp Arg Ser Leu Glu Met
      50             55             60

Thr Pro Glu Gly Arg Ser Leu Ala Ile Ala Val Met Arg Asn Asp Arg
      65             70             75             80

```

0906753 061204

Leu Ala Glu Arg Leu Leu Thr Asp Ile Ile Gly Leu Asp Ile His Lys
85 90 95

Val His Asp Glu Ala Cys Arg Trp Glu His Val Met Ser Asp Glu Val
100 105 110

Glu Arg Arg Leu Val Glu Val Leu Asp Asp Val His Arg Ser Pro Phe
115 120 125

Gly Asn Pro Ile Pro Gly Leu Gly Glu Ile Gly Leu Asp Gln Ala Asp
130 135 140

Glu Pro Asp Ser Gly Val Arg Ala Ile Asp Leu Pro Leu Gly Glu Asn
145 150 155 160

Leu Lys Ala Arg Ile Val Gln Leu Asn Glu Ile Leu Gln Val Asp Leu
165 170 175

Glu Gln Phe Gln Ala Leu Thr Asp Ala Gly Val Glu Ile Gly Thr Glu
180 185 190

Val Asp Ile Ile Asn Glu Gln Gly Arg Val Val Ile Thr His Asn Gly
195 200 205

Ser Ser Val Glu Leu Ile Asp Asp Leu Ala His Ala Val Arg Val Glu
210 215 220

Lys Val Glu Gly
225

<210> 15
<211> 226
<212> PRT
<213> Corynebacterium diphtheriae

<400> 15
Met Lys Asp Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
1 5 10 15

Glu Leu Glu Glu Glu Gly Val Thr Pro Leu Arg Ala Arg Ile Ala Glu
20 25 30

Arg Leu Glu Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ala Arg Met
35 40 45

Glu Arg Asp Gly Leu Val Val Val Ala Ser Asp Arg Ser Leu Gln Met
50 55 60

Thr Pro Thr Gly Arg Thr Leu Ala Thr Ala Val Met Arg Lys His Arg
65 70 75 80

Leu Ala Glu Arg Leu Leu Thr Asp Ile Ile Gly Leu Asp Ile Asn Lys
85 90 95

Val His Asp Glu Ala Cys Arg Trp Glu His Val Met Ser Asp Glu Val

100					105					110						
Glu	Arg	Arg	Leu	Val	Lys	Val	Leu	Lys	Asp	Val	Ser	Arg	Ser	Pro	Phe	
115					120					125						
Gly	Asn	Pro	Ile	Pro	Gly	Leu	Asp	Glu	Leu	Gly	Val	Gly	Asn	Ser	Asp	
130					135					140						
Ala	Ala	Ala	Pro	Gly	Thr	Arg	Val	Ile	Asp	Ala	Ala	Thr	Ser	Met	Pro	
145					150					155					160	
Arg	Lys	Val	Arg	Ile	Val	Gln	Ile	Asn	Glu	Ile	Phe	Gln	Val	Glu	Thr	
165					170					175						
Asp	Gln	Phe	Thr	Gln	Leu	Leu	Asp	Ala	Asp	Ile	Arg	Val	Gly	Ser	Glu	
180					185					190						
Val	Glu	Ile	Val	Asp	Arg	Asp	Gly	His	Ile	Thr	Leu	Ser	His	Asn	Gly	
195					200					205						
Lys	Asp	Val	Glu	Leu	Leu	Asp	Asp	Leu	Ala	His	Thr	Ile	Arg	Ile	Glu	
210					215					220						
Glu	Leu															
225																
<210> 16																
<211> 230																
<212> PRT																
<213> Mycobacterium tuberculosis																
<400> 16																
Met	Asn	Glu	Leu	Val	Asp	Thr	Thr	Glu	Met	Tyr	Leu	Arg	Thr	Ile	Tyr	
1					5					10					15	
Asp	Leu	Glu	Glu	Glu	Gly	Val	Thr	Pro	Leu	Arg	Ala	Arg	Ile	Ala	Glu	
20					25					30						
Arg	Leu	Asp	Gln	Ser	Gly	Pro	Thr	Val	Ser	Gln	Thr	Val	Ser	Arg	Met	
35					40					45						
Glu	Arg	Asp	Gly	Leu	Leu	Arg	Val	Ala	Gly	Asp	Arg	His	Leu	Glu	Leu	
50					55					60						
Thr	Glu	Lys	Gly	Arg	Ala	Leu	Ala	Ile	Ala	Val	Met	Arg	Lys	His	Arg	
65					70					75					80	
Leu	Ala	Glu	Arg	Leu	Leu	Val	Asp	Val	Ile	Gly	Leu	Pro	Trp	Glu	Glu	
85					90					95						
Val	His	Ala	Glu	Ala	Cys	Arg	Trp	Glu	His	Val	Met	Ser	Glu	Asp	Val	
100					105					110						
Glu	Arg	Arg	Leu	Val	Lys	Val	Leu	Asn	Asn	Pro	Thr	Thr	Ser	Pro	Phe	
115					120					125						

Gly Asn Pro Ile Pro Gly Leu Val Glu Leu Gly Val Gly Pro Glu Pro
130 135 140

Gly Ala Asp Asp Ala Asn Leu Val Arg Leu Thr Glu Leu Pro Ala Gly
145 150 155 160

Ser Pro Val Ala Val Val Val Arg Gln Leu Thr Glu His Val Gln Gly
165 170 175

Asp Ile Asp Leu Ile Thr Arg Leu Lys Asp Ala Gly Val Val Pro Asn
180 185 190

Ala Arg Val Thr Val Glu Thr Thr Pro Gly Gly Gly Val Thr Ile Val
195 200 205

Ile Pro Gly His Glu Asn Val Thr Leu Pro His Glu Met Ala His Ala
210 215 220

Val Lys Val Glu Lys Val
225 230

<210> 17
<211> 235
<212> PRT
<213> Mycobacterium smegmatis

<400> 17
Met Asn Asp Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
1 5 10 15

Asp Leu Glu Glu Glu Gly Val Val Pro Leu Arg Ala Arg Ile Ala Glu
20 25 30

Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ser Arg Met
35 40 45

Glu Arg Asp Gly Leu Leu His Val Ala Gly Asp Arg His Leu Glu Leu
50 55 60

Thr Asp Lys Gly Arg Ala Leu Ala Val Ala Val Met Arg Lys His Arg
65 70 75 80

Leu Ala Glu Arg Leu Leu Val Asp Val Ile Leu Pro Trp Glu Asp Gly
85 90 95

Val His Ala Glu Ala Cys Arg Trp Glu His Val Met Ser Glu Glu Val
100 105 110

Glu Arg Arg Leu Val Gln Val Leu Glu Asn Pro Thr Thr Ser Pro Phe
115 120 125

Gly Asn Pro Ile Pro Gly Leu Thr Glu Leu Ala Val Thr Pro Gly Val
130 135 140

Asn Thr Glu Asp Val Ser Leu Val Arg Leu Thr Glu Leu Pro Val Gly
145 150 155 160

Met Pro Val Ala Val Val Val Arg Gln Leu Thr Glu His Val Gln Gly
 165 170 175
 Asp Thr Asp Leu Ile Gly Arg Leu Lys Glu Ala Gly Val Val Pro Asn
 180 185 190
 Ala Arg Val Thr Val Glu Ala Asn Asn Asn Gly Gly Val Met Ile Val
 195 200 205
 Ile Pro Gly His Glu Gln Val Glu Leu Pro His His Met Ala His Ala
 210 215 220
 Val Lys Lys Lys Val Glu Lys Val Glu Lys Val
 225 230 235

 <210> 18
 <211> 225
 <212> PRT
 <213> Mycobacterium leprae

 <400> 18
 Met Asn Asp Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
 1 5 10 15
 Asp Leu Glu Glu Glu Gly Ile Val Thr Pro Leu Arg Ala Arg Ile Ala
 20 25 30
 Glu Arg Pro Thr Val Ser Gln Thr Val Ser Arg Met Glu Arg Asp Gly
 35 40 45
 Leu Leu Arg Val Ala Gly Asn Arg His Leu Glu Leu Thr Thr Lys Gly
 50 55 60
 Arg Ala Met Ala Ile Ala Val Met Arg Lys His Arg Leu Ala Glu Arg
 65 70 75 80
 Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Glu Val His Ala Glu
 85 90 95
 Ala Cys Arg Trp Glu His Val Met Ser Glu Asp Val Glu Arg Arg Leu
 100 105 110
 Ile Lys Val Leu Asn Asn Pro Thr Thr Ser Pro Phe Gly Asn Pro Ile
 115 120 125
 Pro Gly Leu Leu Asp Leu Gly Ala Gly Pro Asp Ala Ser Ala Ala Asn
 130 135 140
 Ala Lys Leu Val Arg Leu Thr Glu Leu Pro Ser Gly Ser Pro Val Ala
 145 150 155 160
 Val Val Val Arg Gln Leu Thr Glu His Val Asp Asp Ile Asp Leu Ile
 165 170 175
 Thr Arg Leu Lys Asp Thr Gly Val Val Pro Asn Ala Arg Val Thr Val

09060753.061201

	180		185		190
Glu Thr Ser Pro Ala Gly Asn Val Ile Ile Ile Ile Pro Gly His Glu	195	200		205	
Asn Val Thr Leu Pro His Glu Met Ala His Ala Val Lys Val Glu Lys	210	215	220		
Val	225				
<210> 19					
<211> 230					
<212> PRT					
<213> Streptomyces lividans					
<400> 19					
Met Ser Gly Leu Ile Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Leu	1	5	10	15	
Glu Leu Glu Glu Glu Gly Val Val Pro Met Arg Ala Arg Ile Ala Glu	20	25	30		
Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ala Arg Met	35	40	45		
Glu Arg Asp Gly Leu Val Ser Val Ala Ala Asp Arg His Leu Glu Leu	50	55	60		
Thr Asp Glu Gly Arg Arg Leu Ala Thr Arg Val Met Arg Lys His Arg	65	70	75	80	
Leu Ala Glu Cys Leu Leu Val Asp Val Ile Gly Leu Glu Trp Glu Gln	85	90	95		
Val His Ala Glu Ala Cys Arg Trp Glu His Val Met Ser Glu Ala Val	100	105	110		
Glu Arg Arg Val Leu Glu Leu Leu Arg His Pro Thr Glu Ser Pro Tyr	115	120	125		
Gly Asn Pro Ile Pro Gly Leu Glu Glu Leu Gly Glu Thr Asp Gly Ala	130	135	140		
Asp Pro Phe Leu Asp Glu Gly Met Val Ser Leu Ala Asp Leu Asp Pro	145	150	155	160	
Gly Gln Glu Gly Lys Thr Val Val Val Arg Arg Ile Gly Glu Pro Ile	165	170	175		
Gln Thr Asp Ala Gln Leu Met Tyr Thr Leu Arg Arg Ala Gly Val Gln	180	185	190		
Pro Gly Ser Val Val Ser Val Thr Glu Ser Ala Gly Gly Val Leu Val	195	200	205		

Gly Ser Gly Gly Glu Ala Ala Glu Leu Glu Ala Asp Thr Ala Ser His
 210 215 220

Val Phe Val Ala Lys Arg
 225 230

<210> 20
 <211> 215
 <212> PRT
 <213> Staphylococcus epidermidis

<400> 20
 Met Leu Thr Glu Glu Lys Glu Asp Tyr Leu Lys Ala Ile Leu Thr Asn
 1 5 10 15

Asp Gly Asp Val Ser Phe Val Ser Asn Lys Lys Leu Ser Gln Phe Leu
 20 25 30

Asn Ile Lys Pro Pro Ser Val Ser Glu Met Val Gly Arg Leu Glu Lys
 35 40 45

Glu Gly Tyr Val Glu Thr Lys His Tyr Lys Gly Ala Arg Leu Thr Glu
 50 55 60

Glu Gly Leu Lys Gln Thr Leu Asp Ile Ile Lys Arg His Arg Leu Leu
 65 70 75 80

Arg Leu Phe Leu Ile Glu Ile Leu Gln Tyr Asn Trp Glu Glu Val His
 85 90 95

Gln Glu Ala Glu Ile Leu Glu His Arg Ile Ser Asp Leu Phe Val Glu
 100 105 110

Arg Leu Asp Lys Ile Leu Asn Phe Pro Lys Thr Cys Pro His Gly Gly
 115 120 125

Val Ile Pro Arg Gly Asn Ser Asp Ala Ala Ala Pro Gly Thr Ser Ile
 130 135 140

Leu Asn Phe Glu Pro Gly Glu Arg Val Thr Val Arg Arg Val Arg Arg
 145 150 155 160

Asp Lys Thr Glu Leu Leu Val Tyr Leu Ser Ser Lys Asp Ile Tyr Ile
 165 170 175

Gly Asn Thr Val Glu Ile Val Ser Lys Asp Asp Thr Asn Lys Val Ile
 180 185 190

Ile Leu Lys Arg Asn Asp Ile Val Thr Ile Leu Ser Tyr Glu Asn Ala
 195 200 205

Met Asn Ile Phe Ala Glu Lys
 210 215

<210> 21

<211> 213
 <212> PRT
 <213> Staphylococcus aureus

<400> 21
 Met Leu Thr Glu Glu Lys Glu Asp Tyr Leu Lys Ala Ile Leu Thr Asn
 1 5 10 15
 Asn Gly Asp Lys Asn Phe Val Thr Asn Lys Ile Leu Ser Gln Phe Leu
 20 25 30
 Asn Ile Lys Pro Pro Ser Val Ser Glu Met Val Gly Arg Leu Glu Lys
 35 40 45
 Ala Gly Tyr Val Glu Thr Lys Pro Tyr Lys Gly Val Arg Leu Thr Glu
 50 55 60
 Asp Gly Leu Thr His Thr Leu Asp Ile Ile Arg His Arg Leu Leu Glu
 65 70 75 80
 Leu Phe Leu Ile Glu Ile Leu Lys Tyr Asn Trp Glu Glu Val His Gln
 85 90 95
 Glu Ala Glu Ile Leu Glu His Arg Ile Ser Asp Leu Phe Val Glu Arg
 100 105 110
 Leu Asp Ser Leu Leu Asn Phe Pro Glu Thr Cys Pro His Gly Gly Val
 115 120 125
 Ile Pro Arg Asn Asn Glu Tyr Lys Glu Lys Tyr Ile Thr Thr Ile Leu
 130 135 140
 Asn Tyr Glu Pro Gly Asp Ile Val Thr Ile Lys Arg Val Arg Asp Lys
 145 150 155 160
 Thr Asp Leu Leu Ile Tyr Leu Ser Ser Lys Asp Ile Ser Ile Gly Asn
 165 170 175
 Glu Val Glu Ile Val Ser Lys Asp Glu Met Asn Lys Val Ile Ile Ile
 180 185 190
 Lys Arg Asn Asp Asn Val Ile Ile Val Ser Tyr Glu Asn Ala Met Asn
 195 200 205
 Met Phe Ala Glu Lys
 210

<210> 22
 <211> 222
 <212> PRT
 <213> Enterococcus faecalis

<400> 22
 Met Thr Pro Asn Arg Glu Asp Tyr Leu Lys Leu Ile Phe Glu Leu Gly
 1 5 10 15

Gly Asp Glu Val Lys Val Asn Asn Lys Gln Ile Val Ser Gly Leu Asp
20 25 30

Val Ser Ala Ala Ser Val Ser Glu Met Ile Ser Lys Leu Val Lys Glu
35 40 45

Asp Leu Val Glu His Ser Pro Tyr Gln Gly Val Gln Leu Thr Glu Lys
50 55 60

Gly Leu Lys Lys Ala Ser Thr Leu Ile Arg Lys His Arg Ile Trp Glu
65 70 75 80

Val Phe Leu Val Glu His Leu Asn Tyr Thr Trp Asn Asp Val His Glu
85 90 95

Glu Ala Glu Val Leu Glu His Val Thr Ser Gln Thr Leu Val Asn Arg
100 105 110

Leu Ala Asp Tyr Leu Asn His Pro Glu Phe Cys Pro His Gly Gly Val
115 120 125

Ile Pro Glu Asp Asn Gln Pro Ile His Glu Glu Lys Arg Gln Thr Leu
130 135 140

Thr Asp Tyr Pro Val Gly Thr Lys Ile Arg Ile Ala Arg Val Leu Asp
145 150 155 160

Glu Lys Glu Leu Leu Asp Tyr Leu Val Ser Ile Asp Leu Asn Ile Gln
165 170 175

Glu Glu Tyr Thr Ile Lys Glu Ile Ala Ala Tyr Glu Gly Pro Ile Thr
180 185 190

Ile Tyr Asn Glu Asn Lys Glu Leu Ser Val Ser Phe Lys Ala Ala Asn
195 200 205

Thr Ile Phe Val Glu Pro Leu Ile Arg Glu Ser Glu Glu Asn
210 215 220

<210> 23
<211> 215
<212> PRT
<213> Streptococcus gordonii

<400> 23
Met Thr Pro Asn Lys Glu Asp Tyr Leu Lys Cys Leu Tyr Glu Leu Gly
1 5 10 15

Thr Arg His Asn Lys Ile Thr Asn Lys Glu Ile Ala Gly Leu Met Gln
20 25 30

Val Ser Pro Pro Ala Val Thr Glu Met Met Lys Lys Leu Leu Ala Glu
35 40 45

Glu Leu Leu Ile Lys Asp Lys Lys Ala Gly Tyr Leu Leu Thr Asp Leu
50 55 60

Gly 65	Leu	Lys	Leu	Val	Ser 70	Asp	Leu	Tyr	Arg	Lys 75	His	Arg	Leu	Ile	Glu 80
Val	Phe	Leu	Val	His 85	His	Leu	Gly	Tyr	Thr 90	Thr	Glu	Glu	Ile	His 95	Glu
Glu	Ala	Glu	Val 100	Leu	Glu	His	Thr	Val 105	Ser	Asp	His	Phe	Val 110	Glu	Arg
Leu	Asp	Gln 115	Leu	Leu	Asp	Tyr	Pro 120	Lys	Ala	Cys	Pro	His 125	Gly	Gly	Thr
Ile	Pro 130	Ala	Lys	Gly	Glu	Leu 135	Leu	Val	Glu	Lys	His 140	Lys	Leu	Thr	Leu
Glu 145	Glu	Ala	Lys	Glu	Lys 150	Gly	Asp	Tyr	Ile	Leu 155	Ala	Arg	Val	His	Asp 160
Asn	Phe	Asp	Leu 165	Leu	Thr	Tyr	Leu	Glu 170	Arg	Asn	Gly	Leu	Gln 175	Val	Gly
Lys	Thr	Ile	Arg 180	Phe	Leu	Gly	Tyr	Asp 185	Asp	Phe	Ser	His	Leu 190	Tyr	Ser
Leu	Glu	Val 195	Asp	Gly	Gln	Glu	Ile 200	Gln	Leu	Ala	Gln	Pro 205	Ile	Ala	Gln
Gln 210	Ile	Tyr	Val	Glu	Lys	Ile 215									
<210> 24															
<211> 217															
<212> PRT															
<213> Streptococcus mutans															
<400> 24															
Met 1	Thr	Pro	Asn	Lys 5	Glu	Asp	Tyr	Leu	Lys 10	Ile	Ile	Tyr	Glu	Leu 15	Ser
Glu	Arg	Asp	Glu	Lys 20	Ile	Ser	Asn	Lys 25	Gln	Ile	Ala	Glu	Lys 30	Met	Ser
Val	Ser	Ala 35	Pro	Ala	Val	Ser	Glu 40	Met	Val	Lys	Lys	Leu 45	Leu	Leu	Glu
Asp	Leu 50	Val	Leu	Lys	Asp	Lys 55	Gln	Ala	Gly	Tyr	Leu 60	Leu	Thr	Lys	Lys
Gly 65	Gln	Ile	Leu	Ala	Ser 70	Ser	Leu	Tyr	Arg	Lys 75	His	Arg	Leu	Ile	Glu 80
Val	Phe	Leu	Met	Asn 85	His	Leu	Asn	Tyr	Thr 90	Ala	Asp	Glu	Ile	His 95	Glu
Glu	Ala	Glu	Val	Leu	Glu	His	Thr	Val	Ser	Asp	Val	Phe	Val	Glu	Arg

100

105

110

Leu Asp Lys Phe Leu Asn Tyr Pro Lys Val Cys Pro His Gly Gly Thr
115 120 125

Ile Pro Gly His Gly Gln Pro Leu Val Glu Arg Tyr Arg Thr Thr Leu
130 135 140

Lys Gly Val Thr Glu Met Gly Val Tyr Leu Leu Lys Arg Val Gln Asp
145 150 155 160

Asn Phe Gln Leu Leu Lys Tyr Met Glu Gln His His Leu Lys Ile Gly
165 170 175

Asp Glu Leu Arg Leu Leu Glu Tyr Asp Ala Phe Ala Gly Ala Tyr Thr
180 185 190

Ile Glu Lys Asp Gly Glu Gln Leu Gln Val Thr Ser Ala Val Ala Ser
195 200 205

Gln Ile Tyr Ile Glu Lys Lys Ala Tyr
210 215

<210> 25

<211> 216

<212> PRT

<213> Streptococcus pneumoniae

<400> 25

Met Thr Pro Asn Lys Glu Asp Tyr Leu Lys Cys Ile Tyr Glu Ile Gly
1 5 10 15

Ile Asp Leu His Lys Ile Thr Asn Lys Glu Ile Ala Ala Arg Met Gln
20 25 30

Val Ser Pro Pro Ala Val Thr Glu Met Ile Lys Arg Met Lys Ser Glu
35 40 45

Asn Leu Ile Leu Lys Asp Lys Glu Cys Gly Tyr Leu Leu Thr Asp Leu
50 55 60

Gly Leu Lys Leu Val Ser Glu Leu Tyr Arg Lys His Arg Leu Ile Glu
65 70 75 80

Val Phe Leu Val His His Leu Asp Tyr Thr Ser Asp Gln Ile His Glu
85 90 95

Glu Ala Glu Val Leu Glu His Thr Val Ser Asp Leu Phe Val Glu Arg
100 105 110

Leu Asp Lys Leu Leu Gly Phe Pro Lys Thr Cys Pro His Gly Gly Thr
115 120 125

Ile Pro Ala Lys Gly Glu Leu Leu Val Glu Ile Asn Asn Leu Pro Leu
130 135 140

00000753 061204

Ala Asp Ile Lys Glu Ala Gly Ala Tyr Arg Leu Thr Arg Val His Asp
145 150 155 160

Ser Phe Asp Ile Leu His Tyr Leu Asp Lys His Ser Leu His Ile Gly
165 170 175

Asp Gln Leu Gln Val Lys Gln Phe Asp Gly Phe Ser Asn Thr Phe Thr
180 185 190

Ile Leu Ser Asn Asp Glu Asp Leu Gln Val Asn Met Asp Ile Ala Lys
195 200 205

Gln Leu Tyr Val Glu Lys Ile Asn
210 215

<210> 26
<211> 216
<212> PRT
<213> Streptococcus pyogenes

<400> 26
Met Thr Pro Asn Lys Glu Asp Tyr Leu Lys Cys Ile Tyr Glu Ile Gly
1 5 10 15

Ile Asp Leu His Lys Ile Thr Asn Lys Glu Ile Ala Ala Arg Met Gln
20 25 30

Val Ser Pro Pro Ala Val Thr Glu Met Ile Lys Arg Met Lys Ser Glu
35 40 45

Asn Leu Ile Leu Lys Asp Lys Glu Cys Gly Tyr Leu Leu Thr Asp Leu
50 55 60

Gly Leu Lys Leu Val Ser Glu Leu Tyr Arg Lys His Arg Leu Ile Glu
65 70 75 80

Val Phe Leu Val His His Leu Asp Tyr Thr Ser Asp Gln Ile His Glu
85 90 95

Glu Ala Glu Val Leu Glu His Thr Val Ser Asp Leu Phe Val Glu Arg
100 105 110

Leu Asp Lys Leu Leu Gly Phe Pro Lys Thr Cys Pro His Gly Gly Thr
115 120 125

Ile Pro Ala Lys Gly Glu Leu Leu Val Glu Ile Asn Asn Leu Pro Leu
130 135 140

Ala Asp Ile Lys Glu Ala Gly Ala Tyr Arg Leu Thr Arg Val His Asp
145 150 155 160

Ser Phe Asp Ile Leu His Tyr Leu Asp Lys His Ser Leu His Ile Gly
165 170 175

Asp Gln Leu Gln Val Lys Gln Phe Asp Gly Phe Ser Asn Thr Phe Thr
180 185 190

05066753-051201

Ile Leu Ser Asn Asp Glu Asp Leu Gln Val Asn Met Asp Ile Ala Lys
195 200 205

Gln Leu Tyr Val Glu Lys Ile Asn
210 215

<210> 27

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Consensus
sequence

<400> 27

gtaggttagg ctaacctat

19

<210> 28

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Consensus
sequence

<400> 28

ttaggttagg ctaacctaa

19

<210> 29

<211> 19

<212> DNA

<213> *Corynebacterium diphtheriae*

<400> 29

ttaggatagc ttacaccta

19

<210> 30

<211> 19

<212> DNA

<213> *Streptomyces pilosus*

<400> 30

ttaggttagg ctcaccta

19

<210> 31

<211> 19

<212> DNA

<213> Unknown Organism

<220>
 <223> Description of Unknown Organism: 16S ribosomal RNA

<400> 31
 ccagggtatc taatcctgt 19

<210> 32
 <211> 19
 <212> DNA
 <213> Unknown Organism

<220>
 <223> Description of Unknown Organism: 19 kDa antigen

<400> 32
 gcaggccagt gaaacctgt 19

<210> 33
 <211> 20
 <212> DNA
 <213> Unknown Organism

<220>
 <223> Description of Unknown Organism: htrA homologue

<400> 33
 acaggtggtg ctcaaccacg 20

<210> 34
 <211> 20
 <212> DNA
 <213> Unknown Organism

<220>
 <223> Description of Unknown Organism: phoP homologue

<400> 34
 gaaggtaacg ttcaaccaat 20

<210> 35
 <211> 20
 <212> DNA
 <213> Unknown Organism

<220>
 <223> Description of Unknown Organism: adhB homologue

<400> 35
 gcaggtgacc gtcaaccgat 20

<210> 36
 <211> 19

<212> DNA
<213> Unknown Organism

<220>

<223> Description of Unknown Organism: narG homologue

<400> 36

gaaggtcaac caaacaaga

19

090607153.06.1204